LINK-UP
HARDWARE REVIEW

A Reprint From LINK-UP

A "Uniform" Solution To Incompatibility

By Dave Prochnow

If you've been around the microcomputer industry for more than ten years, you have witnessed the rise and fall of over half a dozen different "standard" operating systems. Beginning with the original 8-inch CP/M (Control Program for Microprocessors) format (the iCOM Frugal Floppy circa 1976), numerous operating systems have come and gone.

This unfortunate fluctuation in popular operating systems also contributes to an equally unfortunate duplication in software resources. In other words, each new operating system "standard" demands the purchase of a new word processing, spreadsheet, or database program. In addition to these repeated productivity program purchases, a unique set of files are created by each said software standard. The net result is that a CP/M-created WordStar file cannot be read or manipulated by a PC-DOS-based WordStar. Suddenly, the great computer revolution grinds to a screeching halt.

Enter MicroSolutions Computer Products. Recognizing the need for a data exchange avenue between various microcomputer operating systems, the people at MicroSolutions devised a powerful hardware/software solution that can handle virtually any CP/M-to-PC-DOS file translation problem. Labeled UniForm-PC and UniDOS, this potent duo is able to not only read *all* CP/M files on any PC-DOS system (UniForm-PC), but a well-crafted emulation environment (UniDOS) also enables CP/M 8080 (or Z80) COM programs to run directly on any IBM PC or clone.

UniForm-PC and UniDOS

UniForm-PC (Version 2.13)
UniDOS (Version 1.23(2))
Z80 Coprocessor Card
Price: $175
MicroSolutions Computer Products
132 W. Lincoln Hwy.
Dekalb, IL 60115
(815) 756-3411

Software magic

Leading this remarkable operating system compatibility solution is UniForm-PC. Essentially, UniForm-PC is a piece of programming wizardry that turns one IBM PC floppy disk drive into a CP/M drive. No external or internal hardware boards are needed to achieve this transformation. Just install UniForm-PC on your PC-DOS system and begin reading, copying, and writing CP/M files.

Over 150 different CP/M formats can be read and understood with UniForm-PC. Only a simple installation program must be run prior to accessing all of your "old" Z80-based files.

Your first step in reopening the formerly closed CP/M door on your DOS system is to copy all of the files from the UniForm-PC master disk to a PC-DOS working disk. Yes, UniForm-PC is *not* copy-protected. This is a strong feature in favor of the folks at MicroSolutions. One important point to remember during this copying step, however, is that the working disk must be a system disk. In other words, the DOS system files (COMMAND.COM, etc.) must already be present on your working disk before the UniForm-PC files are copied over. This step is necessary so that the working disk can be a boot disk for your PC.

Following this copying procedure, the UniForm-PC program UINSTALL is run. UINSTALL is a quick menu-based installation program that creates a CONFIG.SYS file that loads UNIFORM.SYS into the PC's memory during a system boot. UINSTALL asks several questions about the configuration of your system. Once these questions have been answered, a battery of six CP/M format menus appears. Each menu can be accessed through either the entry of a number key corresponding to the menu's number or by using the IBM PC's PgUp and PgDn cursor keys.

When the correct menu has been located, the specific CP/M format must be selected. Once again, either the exact letter key corresponding to the desired format can be entered or the Home, End, and cursor keys can be used for highlighting the required format. Following this selection, UINSTALL is exited and the PC system rebooted.

Upon rebooting your PC-DOS system with the UniForm-PC/DOS system disk, a CP/M disk drive is created with the parameters that you selected with UINSTALL. This new 8-bit disk drive is actually your former 16-bit B disk drive, although it is labeled C. Therefore, your PC now has three distinct disk drives; drives A and B are PC-DOS 16-bit drives, while drive C is a newly created 8-bit CP/M drive. Confused? Although the written description for the UniForm-PC disk drive conversion feat sounds foreboding, its actual implementation will quickly become second nature in a matter of several "working" minutes.

Once you've mastered this new labeling scheme, CP/M and DOS files can be freely exchanged between the two formats. This data exchange can be approached at either an operating system level or from the familiar confines of your productivity software. For example, WordStar 4.0 on an IBM PS/2 can read and write Osborne 1 files. In spite of this versatility, there is one limitation, however. UniForm-PC is incapable of running CP/M software. Another MicroSolutions' product supplies this missing capability.

Tested CP/M Programs

ADVENTURE (Generic)
CBASIC
C Compiler (Generic)
CP/M (Version 2.2)
dBASE II (Version 2.3B)
Eliza (Generic)
First Osborne Group Library (FOG)
FORTRAN-80
GRAFIKS (Version 2.4)
GRAMMATIK (Version 1.82)
JRT Pascal
Kaypro Initdisk/Setdisk
LYNC
MBASIC-80
Micro Cornucopia Library
Nevada PILOT
Perfect Calc
Perfect Filer
Perfect Speller
Perfect Writer
POWER
Profit Plan
UniFORM
The Word Plus
WordStar (Version 3.3)
WordStar + MailMerge (Version 3.0)

Running CP/M programs

UniDOS provides Z80 emulation for

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the PC-DOS environment, which allows an IBM PC to run virtually *any* CP/M program. In order to provide the highest degree of user application, there are three different versions of UniDOS. The standard UniDOS is a strictly software-based Z80 emulation environment. In other words, no external or internal hardware boards are needed for running CP/M programs on the UniDOS-installed PC.

Another version of UniDOS employs a NEC V20 replacement MPU as the source for the 8080 emulation. The NEC V20 is a direct pin-for-pin replacement for the PC's 8088 MPU. An added virtue of the V20, however, is that is can interpret both 8088 code, as well as 8080 instructions.

The final UniDOS version is actually the best for running CP/M programming. A special half-size Z80 coprocessor board is provided with UniDOS for running all Z80 and 8080 programs. This coprocessor sports an 8 MHz Z80 which is supported by 64K bytes of 8-bit RAM. Furthermore, this board is completely invisible to both the user and the PC. Therefore, every CP/M program that is accessed from the UniForm-PC disk drive is able to automatically run on the PC with no muss and no fuss.

Before CP/M software will run with any version of UniDOS, it must be installed on a PC-DOS working system disk. This copying procedure is identical to the one used with UniForm-PC. Following the establishment of this working copy disk, UniDOS must be installed for your particular system.

The installation is automatic the first time UniDOS is run on your DOS system. Only one major menu is supplied during the UniDOS installation. This menu is used for selecting the type of video terminal which UniDOS should cmulate during CP/M program operation. Several other simple yes/no questions complete the configuration of your UniDOS CP/M system. When all of the questions have been answered, UniDOS displays a summary of the installed parameters and returns to the PC-DOS prompt. UniDOS is now actively resident in the PC's memory.

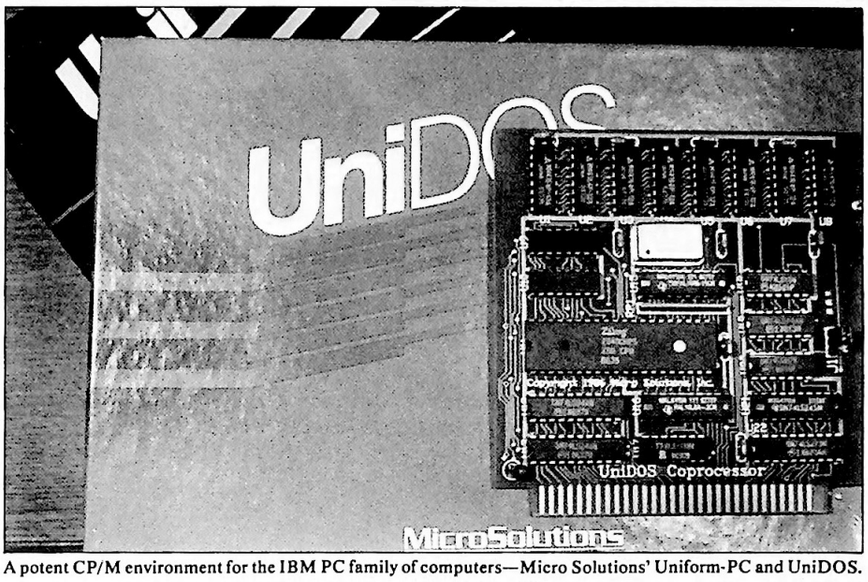
No system calls or hot-key sequence is needed prior to running a CP/M program. These three steps reflect the simplicity of the UniDOS operation:

(1) Use UniForm-PC to label a CP/M disk drive.

(2) Access the CP/M disk drive (C) and insert the CP/M program disk into the drive.

(3) Enter the command sequence for loading and starting the CP/M program.

Following the initiation of Step 3, UniDOS automatically takes over control of the PC and begins the emulation of the Z80/8080 environment. A special highlighted information line is displayed along the bottom of the IBM PC monitor stating the successful engagement of UniDOS, the amount of available CP/M program space (63K bytes RAM), and the available emulation mode (UniDOS, V20, or Z80 Coprocessor). After several seconds, this information line disappears and your 16-bit PC-DOS IBM PC is now running 8-bit software.



A potent CP/M environment for the IBM PC family of computers—Micro Solutions' Uniform-PC and UniDOS.

An evaluation

While all of these performance promises sound enticing to the IBM PC owner with a large CP/M library, the real issue is does it work? Short of a lengthy explanation, the answer would have to be a qualified "yes." In fact, there is nothing that prevents a complete endorsement of the UniForm-PC/UniDOS combination. The need for a qualified "yes" response arises from several key points that must be understood by every UniForm-PC/UniDOS user.

First, a full range of Osborne, Kaypro, and Epson CP/M disks, files, and programs were tested with both UniForm-PC and UniDOS (see list). Each file was read and copied flawlessly between DOS drives and the lone CP/M disk drive.

Second, each tested CP/M program ran without a hitch on the target IBM PC XT that was equipped with the Z80 Coprocessor UniDOS version. One of the first key points that contributed to the previously mentioned qualified "yes" recommendation is that only one CP/M disk drive is present on this UniForm-PC/UniDOS CP/M emulation environment. Therefore, do not expect programs like WordStar or dBASE II to function properly unless all files and records are housed on the main program disk. Breaking this rule will cause the CP/M program to respond with a minor or major system error.

Another precautionary point to remember when using the UniForm-PC/UniDOS combination for running CP/M programs is the speed of execution issue. Basically, the standard UniDOS version uses an interpreter mode which will slow the operation of Z80 and 8080 programs noticeably. Even the NEC V20 UniDOS version provides only a modest speed improvement. Additionally, this UniDOS version provides this execution increase to 8080-based programming and not to Z80-coded programs.

On the other side of this speed of execution issue is the Z80 Coprocessor UniDOS version. The 8 MHz Z80 MPU on this coprocessor board makes all CP/M program execution literally fly. While this increase won't be objectionable on productivity programs, games like "Aliens" and "Pacman" are virtually impossible to play. In short, realize that there are identifiable differences in the speed of program execution with UniDOS and select the version that is most compatible with your intended use.

Finally, certain hardware-dependent CP/M programs like Epson QX-10's Valdocs will not work with UniForm-PC and UniDOS no matter how hard you try. In the case of the slow, error-plagued Valdocs, this absence is not a great loss. Other programs which suffer from this same limitation (Osborne 1 SuperCalc and Morrow NewWord), however, might color your selection of UniForm-PC and UniDOS as the ideal solution to your CP/M problems.

In spite of these minor qualifications, the bottom line is that UniForm-PC and UniDOS deliver on their advertising claims. This point is further emphasized by MicroSolutions with their recent incorporation of UniForm-PC with the Z80 Coprocessor UniDOS version for an unbeatably low price of $175.00. Based on their performance along with a proven ability to resurrect presumed dead CP/M files and programs, the UniForm-PC and UniDOS combination rate a Best Buy.

Ratings Systems

Best Buy: Run out and buy it, no questions asked.
Excellent Buy: If you need one, then this is your best bet.
Good Buy: Average; it will get the job done.
Poor Buy: Save your money.

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